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HOW DOES SYRIAN IMMIGRATION
AFFECT INFORMAL LABOR MARKET IN
THE DIFFERENT REGIONS OF TURKEY?
APRIL 2020

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Abstract

The Syrian War has caused a major refugee crisis in the world starting in 2011. From then, almost 5.6 million Syrians have been externally displaced due to the impact of ongoing civil war in the country. Since the beginning of the Syrian War, 3.57 million refugees have immigrated to Turkey as refugees. Especially, the cities near in the Syrian-Turkey border and Istanbul are the most populated ones. As the Syrian immigration problem continues to grow in Turkey, the unsystematic settling of Syrian refugees has caused unstable sub-regional labor markets in some cities of Turkey. In

addition to Turkey's recent economic recession, increases in informal Syrian unemployment continues to form 'supply shocks' to informal labor in different sectors. This refugee problem is mostly seen in the informal sector because of the education level of the refugees and current government policies. This paper investigates the impact of Syrian immigration in Turkey in the informal employment, formal employment and unemployment. Using random and fixed effects regressions, this paper finds that places with more refugees had an increase in unemployment and lower the wages. This is due to both huge inflow of Syrian refugees and declining Turkish economy.

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How Does Syrian Immigration Affect Informal Labor Market in the Different Regions of Turkey? *

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Key words: The Syria Civil War; refugee crisis; labor market; formal and informal sectors; minimum wage
JEL Codes: E29, J15

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Introduction

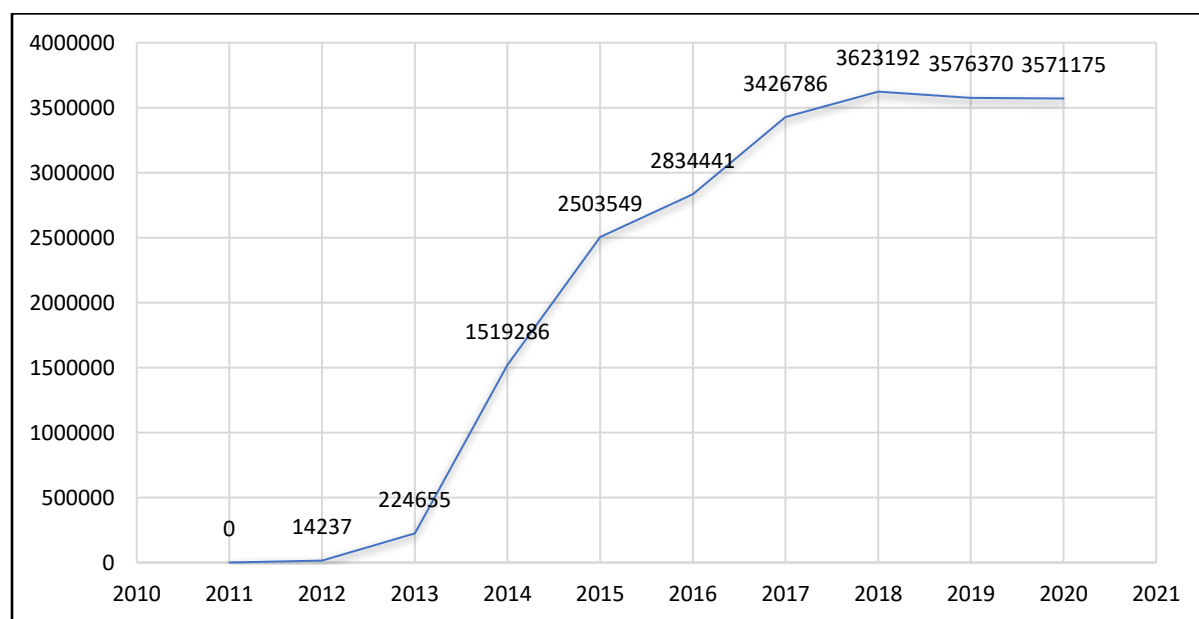
In 2011, protests in Syria against President Bashar al-Assad's regime had turned into a regional war rapidly. The Syrian War has caused a major refugee crisis in the world since then. Almost 6.2 million Syrians have been internally displaced due to the impact of ongoing civil war in the country. This is the biggest internally displaced population in the World (UNHCR, 2019). On the other hand, 5.6 million Syrians have been externally displaced as refugees around the Middle East, and a smaller amount around the World. Turkey has been the largest refugee-hosting country since the beginning of the war. As of today, Turkey hosts 3.587 million refugees with temporary protected status, followed by Lebanon (914,648), Jordan (654,692), Iraq (245,810), Egypt (129,210) and others in North Africa (35,713). It has been almost 9 years since the Syrian war started and it is one of the most humanitarian problem of our century. According to UNHCR data, 70% of Syrians in Lebanon is below poverty line whereas 93% of Syrians manages to survive under poverty line in Jordan.

For Turkey, the number of registered Syrian refugees increased until 2018. From 2018-2020, this number has decreased a little. 1,657,936 (46.61%) of these people are children between the ages of 0-18. The total number of children (0-18) and women is 2,530,547 people. According to the age chart, the average age of registered Syrian refugees is 22.7. As of 19 March 2020, the number of Syrians staying in temporary accommodation centers was announced by the Migration Administration as 63,948 people. As of March 19, 2020, the number of Syrians living in cities has been 3,523,831. Hence, 98.22% of Syrians live in cities. The Migration Administration decides in

which city Syrians will live. Some big cities, especially Istanbul, are closed to accommodate Syrian refugees.¹

At first, Syrians were hosted in the refugee camps, but, in time, most of the Syrian refugees have moved away from the camps and settled in the cities nearby the Syrian-Turkey borders. Some examples of cities nearby these borders are: Gaziantep (hosting 450,031 immigrants); Hatay (hosting 438,741 immigrants); Şanlıurfa (hosting 422,729 immigrants); Adana (hosting 246,462 immigrants); Mersin (hosting 210,623 immigrants). The rest dispersed throughout Turkey. As Figure 1 shows, there has been an increase of 1.2 million refugees since 2015.

Figure 1: Syrians under the Temporary Protection in Turkey



Source: Directorate General of Migration Management of Turkey

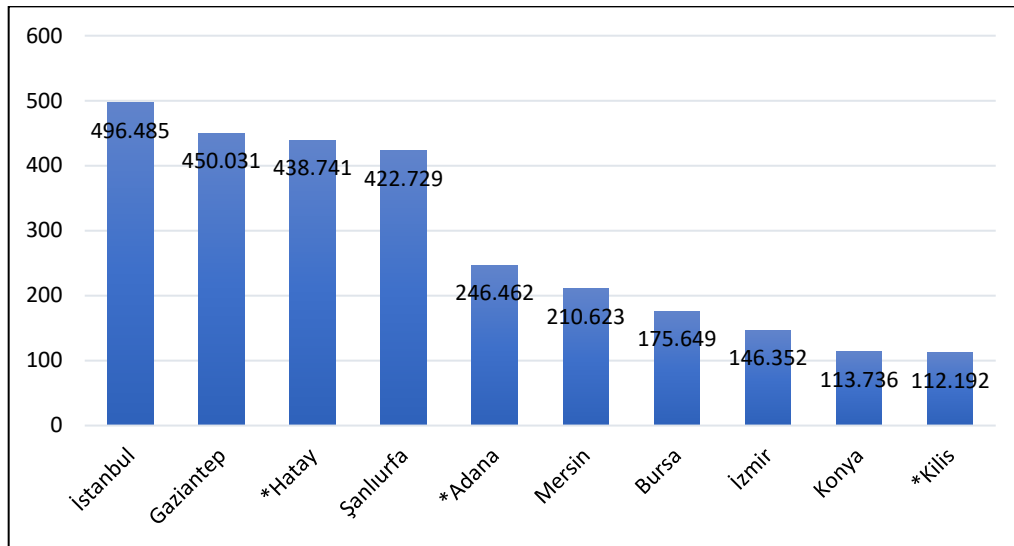
In the Figure 1, it can be seen that the increase from 2011 to 2013 is only 224,655 refugees. Then, the refugee inflow rises dramatically from 2013 to 2018. However, there is a slightly decrease in the last two years. In total, the ratio of registered Syrians under temporary protection to the

¹ <https://multeciler.org.tr/turkiyedeki-suriyeli-sayisi/>

Turkish population is 4.31% across the country. According to the December 31, 2019 as the end of Turkey's population by TurkStat announced that 83.154.997.

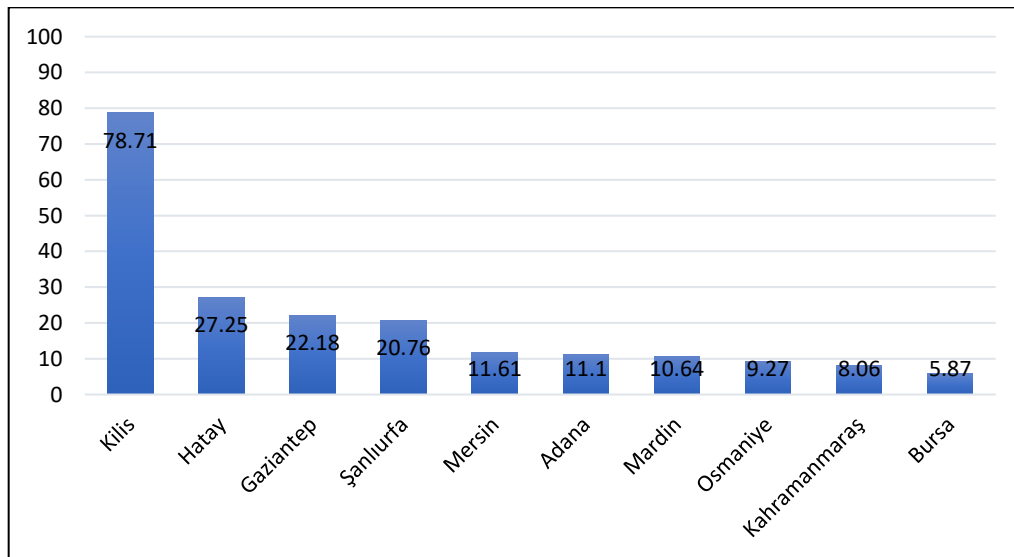
Below, Figure 2 shows the top ten cities with most Syrian population.

Figure 2: Top 10 cities with the most Syrian Population



*Cities with Temporary Accommodation Centers; Source: Multeciler Dernegi

Figure 3: Top 10 Cities with Most Share of Syrians in Population



Source: Multeciler Dernegi

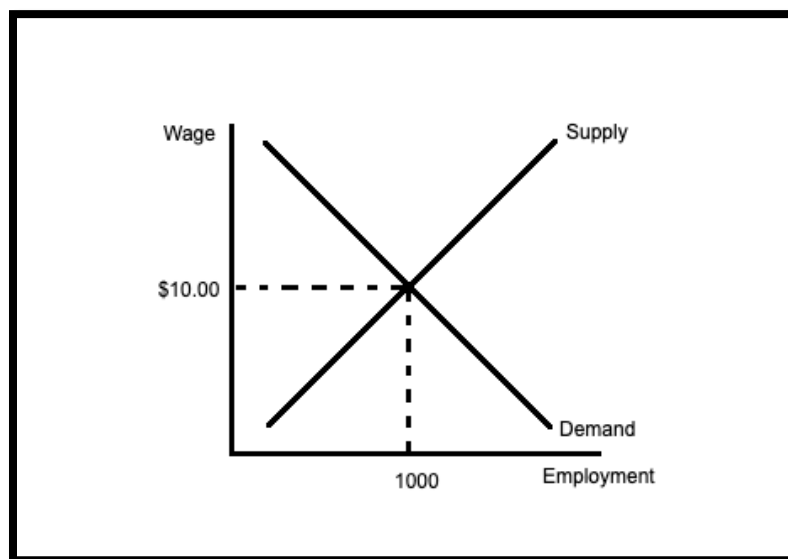
Figure 3 shows the top ten cities with most share of Syrians in population. From this figure, it can be seen that Southeastern Turkey is the most Syrian refugee populated region in Turkey. This is Syria and Southeastern Turkey cities are neighbors. As seen in the figure, Kilis has a total of 112,192 Syrian refugees that make the 78.71% of the population of the city. That is because Kilis and Aleppo are very close to each other.

Combined, these 3 figures show how Syrian refugees have impacts on formal, informal sectors as well as unemployment in different regions of Turkey depending on their concentration and population. These figures are likely to indicate that formal market ratios will decrease while informal market integration will increase and the wages will fall. Therefore, employment will fall as well in the most regions overall. The section below explains this theoretically.

Theoretical Background

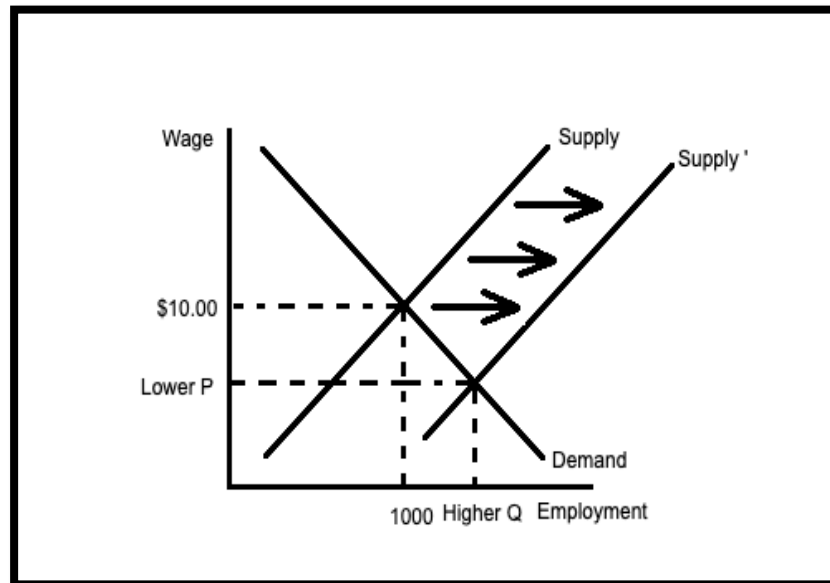
In economic models, the theory is that while migration increases labor supply, it reduces employment and wages.

Figure 4: The Market Before the Immigration



In the Figure 4, there is an equilibrium between the supply of workers and the demand of employers at the point (1000, 10).

Figure 5: The Short-Run Impact of Immigration on Equally Skilled Natives



In the Figure 5, the effect of immigration can be seen due to an influx in the supply of workers. When the supply of workers increases, the supply curve shifts to the right. However, the demand curve does not get affected by the influx rather stay fixed. Hence, the wage for workers decrease to ‘Lower P’ as shown in the graph while the supply of workers increases to ‘Higher Q’.

“Migration can turn out to be a positive influence in the long run. However, the Turkish economy is not currently strong enough to absorb such an increase in the labor force” (Esen and Binatli, 2017). Therefore, we see an increase in the unemployment rate in Turkey. Thus, the demand curve, first, stays fixed then shifts to the left in the Figure 4 or 5.

When people enter into an economy, they both demand and supply goods. They need basic needs so they demand goods. They need to be able to afford them so they work. In theory, wages decrease in the sectors of labor market where the migrants are concentrated since supply of labor

increases to a considerably greater extent than demand. On the contrary, wages increase in the other sectors of the labor market since demand for labor increases whereas supply stays constant.

However, this model might differ based on real-life issues. It is important to note that the educational and financial backgrounds, age and total numbers of immigrants are essential factors to determine the economy of a country, in addition to the current economy of the country. In Turkey's case, most of the Syrian immigrants are young uneducated people with very low financial backgrounds. In addition, Syrian immigrants do not talk Turkish but Arabic. The language barrier is an obstacle for them to integrate themselves into the formal market as well as the society. Therefore, the informal market is a better opportunity for them to find jobs where they are required to do labor works in areas such as construction, agriculture and infrastructure. The supply of labor in the informal market is more inelastic because people are desperate to work so they can survive. In this case, the same increase in supply drops the wages even more as the workers have no bargaining power.

Using random and fixed effects regressions, this paper finds that places with more refugees had an increase in unemployment and lower wages. This is due to both the huge inflow of Syrian refugees and the declining Turkish economy.

Literature Review

Immigration Cases in Different Contexts

The research "Wage and Employment Effects of Immigration to Germany: An Analysis Based on Local Labor Markets" by Pischke and Velling (1994) analyses the impact of ascending immigration on the German labor market. They utilize "a dataset of county level variables for the late 1980s." They explore two measures of immigration: One of them is 'the change in the share of

foreigners' from 1985 to 1989 and the other one is 'one-year gross and net flows of immigration to an area.' They point out the potential immigration problem in the local markets by instrumenting the change in the foreign share by its previous level. They find some important results. For unemployment, their results show that there are large effects of an increased foreign share. However, their assumption is that these results can be misleading. Based on their sayings, immigrants are likely to move into lower employment fields whereas unemployment is more likely to be mean-reverting during the boom they explore. Compared to Turkey-Syria case, this is not true. As seen in figures 2 and 3, Syrian refugees are likely to concentrated on Southeastern Turkey where the Turkey-Syria border is. They do not have the right to choose where to move in Turkey. Hence, in Southeastern Turkey, we see an opposite case of what Pischke and Velling (1994) says in their paper: The unemployment rises in Southeastern Turkey. However, from their perceptive, a positive correlation occurs between the instrument and the unemployment change. When Pischke and Velling considered mean-reversion in unemployment, they did not find any detrimental effect of immigration on local labor markets. They found similar results from the basis of one-year flow data of immigrants. Moreover, their results do not defend the hypothesis that the absence of displacement effects is due to a response to native migration models. The first immigrant settlement in Germany is largely independent of labor market conditions. Internal movements that follow foreigners react more to local unemployment, in spite of much less than local domestic migration (Pischke and Velling, 1994).

The research "Labor Market Competition and Individual Preferences Over Immigration Policy" by Scheve Slaughter (2001) displays the analysis of the determinants of individual preferences over immigration policy in the U.S by utilizing 3-year data. They have two important results. The first one is that low-skilled workers are "significantly more likely to prefer limiting

immigrant inflows into the U.S.” In my opinion, this case would be true also in Turkey-Syria case, especially for Turkish workers side. As I mention in the second channel of refugee inflow in the next section, Turkish people do not want any more Syrians into the country, they would rather send the ones already in Turkey back to Syria, complaining about unemployment and aid to them by the current government

For Slaughter (2001)’s case, his result implies when evaluating immigration policy, individuals-related horizons over time thought that the US economy absorbed migrant inflows at least partially by changing wages. The second one is that they could not find any evidence that the relationship between skills and immigration views is stronger in high immigrant societies.

In the research “The Impact of Immigration on the British Labour Market”, Dustmann, Fabbri and Preston (2005) found that there is no strong evidence of an impact of immigration on aggregate employment, participation, unemployment and wages, however, they found some differences based on educational background. The importance of this research was that the immigration to the UK ‘is not concentrated at the lower end of the skill distribution, but immigrants (recent immigrants as well as the existing immigrant population) resemble quite closely the skill composition of the native workforce. This is a very interesting fact compared to the other immigration cases because the immigrants compete with advanced-skilled jobs in the formal sector. When we compare this case to Turkey- Syria case, we can conclude that language is very important to find a job. English is an international language and it is the native language of UK. Most of the immigrants in UK is probably university graduated people. However, in Turkey’s case, Syrian refugee crisis was an unexpected immigration flow, and almost none of them knew Turkish before coming. Additionally, Turkey accepted all refugees without classifying their age,

education, wealth or social status whereas some developed countries welcomed only some limited number of educated wealthy Syrian refugees.

In another research “Wage and Employment Effects of Immigration to Germany: Evidence from Skill a Group Approach”, Bonin (2005) compares the native employments Germany and the United States based on the immigrants they had over 1975-1997. Based on Bonin (2005)’s results, 10% of increase of immigrants’ share in the workforce would decrease the wages in less than 1% and not increase unemployment. Yet, while adverse effects may seem stronger for less-skilled and older workers, the evidence is the complete opposite of a parallel study that shows a consistent and significant negative impact of immigrant labor supply shock for the US on domestic competitors. It is important to mention here that Germany needed labor after WWII. World War II was the second biggest war in the history from 1939 to 1945. It started with the invasion of Nazi Germany into Poland. WWII involved 100 million people in more than 30 countries that were against each other in two sides: The Allies and the Axis. It was the deadliest military war in the world because an estimation of 40-50 million people died.² In a booming post-war economy, there was a huge demand for unskilled labor. To fill this gap, many low-skilled workers, including a major Turkish group of workers, went to different parts of Germany to work. At the time, the employees covered the travel expenses for one way; the return tickets were out of the deal. Thus, many Turks chose to stay in their new homeland. Nowadays, there are over 3 million Turkish descends people live in Germany (Prevezanos, 2011). In this case, I think it is not a fair comparison to make between

² Royde-Smith, John Graham, and Thomas A. Hughes. “Forces and Resources of the European Combatants, 1939.” Encyclopædia Britannica, Encyclopædia Britannica, Inc., 7 Nov. 2019, www.britannica.com/event/World-War-II/Forces-and-resources-of-the-European-combatants-1939.

German and the U.S. immigration case since Germany needed low-skilled labor in the market, and did treaties with other countries in order to equalize the demand-supply disequilibrium whereas people moved to the United States for a better life because many saw the U.S as the “country of opportunities”. In Turkish case, these both cases might be true or false depending on the conditions. For some Syrians, Turkey has been new hope and with better opportunities where some aim to cross Europe to work and make a better living. Furthermore, Turkey upper scale classes businesses did not need any low-skilled Syrians but benefited from in the construction works by paying them low wages to grow their business but it had impact on Turkish working-class. As of 2020, the economy is not sufficient to construct any building; The constriction boom has been already gone. Therefore, both many Syrians and Turks are unemployed in formal and informal sectors.

The research “The Impact of Immigration on Native Employment: Evidence from Italy” by Fusaro and López-Bazo (2018) exhibits a positive/null impact of immigration on native employment in Italy between 2011 and 2017. For low-educated Italian, an adverse effect is seen in the results. This adverse effect is affirmative for Turkish labor market as well. For low-educated Turkish people, there is a negative impact in the labor market. Based on overall outcomes, education plays an important role in the Italian labor market for both immigrants and natives. Additionally, gender impact is almost negligible. In detail, high-qualified females are likely to get benefit from the presence of immigrants whereas low-qualified ones are not. On the contrary, the gap among males is evidently larger. While high-qualified males are likely to get benefit from the presence of immigrants, low-qualified ones have to compete with more workers in the market.

In their research “The effect of immigration on the labor market performance of native-born workers: some evidence for Spain”, Carrasco, Jimeno and Ortega (2008) did not find any

impact of immigration on neither native employment nor wage. Their paper covers the 2nd half of 1990s, the time in which immigration influx increased. According to their research, the number of foreign workers who had Spanish work permit increased by almost 70%. Moreover, this increased the total population of immigrants in Spain increased by more than 8% from 1991 to 2005. These number brought some speculations about the impact of alien workers in the country; how those people had affected the native employment. Surprisingly, this study found no effect of immigration on native employment and wage.

Syrian Immigration on Turkish Labor Market

The impact of immigration on the labor market for native employment and wage is one of the most controversial topics in modern labor economics (Borjas, 2014). The theoretical economical models teach us the immigration concept in terms of ‘stable’ condition. It means that the real-life parameters are most likely to be ignored. In the Syrian immigration on Turkey case, there are many different papers in which some effects can be seen or no effect can be found. Esen and Binatli (2017) mentions that Turkish economy has been affected by this refugee flow from four channels.

Public finance is the first channel. In the first four years of the immigration, Turkey spent almost 1% worth of GDP on refugee aid. The main problem that Turkey encounters is the long-run impacts of the Syrian refugee crisis. The expenses of Syrian refugees are gradually increasing. In Budapest, “Erdogan said Turkey has spent \$40 billion to support the refugees.”³ Turkey has been seeking more aid from European countries in the past decade. Many countries are taking

³ Turkey's Erdogan Threatens To Let Refugees Into Europe If More Aid Not Given. (2019, November 7). Retrieved December 10, 2019, from <https://www.rferl.org/a/turkey-erdogan-threatens-to-let-refugees-into-europe-if-more-aid-not-given/30258718.html>.

advantage of being a free-rider in this case. Most of the countries promised to help Turkey financially if Erdogan keeps them within the country and do not let them cross the European border. However, Turkey has not received any major contributions from EU. Syrian Civil War is a world problem; however, Turkey is the most impacted country by it compared to other European countries. Erdogan, on the other hand, has mentioned that Turkey might “open the gates” to Europe “for Syrian refugees if the European Union does not provide additional support for them”⁴. Moreover, Erdogan has opened the gates in January 2020 from the Turkish side where the Turkish-Greece border is. However, the history has witnessed unhumanitarian incidents in the border: “Greek security forces and unidentified armed men at the Greece-Turkey land border have detained, assaulted, sexually assaulted, robbed, and stripped asylum seekers and migrants, then forced them back to Turkey, Human Rights Watch said today. Top EU officials have praised Greece’s border control measures and provided support through the European Border and Coast Guard Agency”⁵ From this point, we see that not only Greece want them within their lands but also European Union as a whole. Erdogan was welcome to host Syrians as much as Turkey was able to. Opening the border reflects the Turkey’s current economical and political predicament. Yet, some Syrians sees Turkey as their new homeland because they have begun to a new life there. For example; “Ali escaped from Damascus and is now set to continue his university studies in Istanbul, taking advantage of free education for Syrians he says his long-term future is Turkey” (Jones, 2019). While very low-class Syrians try to enter into European borders, those who have been either already middle or upper class or reached middle class level rather to stay in Turkey

⁴ Turkey's Erdogan Threatens To Let Refugees Into Europe If More Aid Not Given. (2019, November 7). Retrieved December 10, 2019, from <https://www.rferl.org/a/turkey-erdogan-threatens-to-let-refugees-into-europe-if-more-aid-not-given/30258718.html>.

⁵ <https://www.hrw.org/news/2020/03/17/greece-violence-against-asylum-seekers-border>

and not risk their belongings by going to the border. Some of them have gotten citizenship and some still are on the line to get one. I think it is clear that every Syrian refugee has different aims and goals in life and some just accept their current situation, thus, we are witnessing a diaspora of Syrian refugees throughout the Middle East and the Europe.

Entrepreneurship is the second channel. Syrians have been an entrepreneurial actor in Turkey, in addition to their action on labor supply. It has created a demographical change in Turkey, especially in Gaziantep, Sanliurfa, Hatay, and Istanbul. In these cities, Turkish people have become more nationalist and anti-Syrians. Although many Syrians work under minimum wage, some Turkish business owners have stopped hiring them based on anti-Syrian propagandas. Therefore, Syrians have come with another plans; they have begun to open their business as groups in these sub-regions. Although many Turkish citizens try not to do business with them, they have enough number of Syrians in those areas. For example: “Abdi left Syria at the start of the civil war. Arriving in Istanbul, speaking little Turkish and having no contacts, he managed to build a successful business. He now owns two restaurants, his children are in college, and he sees only Turkey offering him a future”.⁶ Furthermore, Syrians used to receive some grants from some government institutions. The aid to Syrian refugees outraged Turkish citizens especially when the unemployment rate has recently reached 14.7%, and the interest rate has been increasing rapidly over the past recent years. “Turks in socially and economically-stressed districts increasingly believe that the refugees are competing for their jobs and that the government grants them more privileges” (Yurdakul, 2019). Having said that, Turkish public opinion has changed over time

⁶ Jones, D. (2019, October 31). Many Syrian Refugees in Turkey Want to Stay, Despite Erdogan Plan to Force Their Return. Retrieved December 10, 2019, from <https://www.voanews.com/europe/many-syrian-refugees-turkey-want-stay-despite-erdogan-plan-force-their-return>.

against the Syrian refugees even though they were glad to be help them out throughout wartime. “According to the respected pollster Konda, the percentage saying they would have no problems with Syrian refugees in their city was 72 percent in February 2016. Now, it is below 40 percent. These numbers are reason enough to suspect that a major shift in public opinion is underway” (Sazak, 2019). However, these actions have a consequence which is violence. Crime rates have reached the highest point than ever. “Resentments sometimes turn into violence. In June, a group attacked Syrian storefronts after rumors spread that a Syrian refugee had sexually assaulted a Turkish girl in Istanbul. Anti-immigrant hashtags such as #SuriyelilerDefoluyor (Syrians getting the hell out) or #UlkemdeSuriyeliIstemiyorum (I don’t want Syrians in my country) that had been around reappeared on social media, while others called for compassion and solidarity” (Yurdakul, 2019). In spite of all these negative issues, Now, many Syrians have already integrated into the Turkish labor market and society. According to the polls done by the Center for American Progress, Syrians do not wish to go back to Syria. Life might be difficult in Turkey; however, they feel safe at least. On the contrary, in his paper (2019) “Syrian Migration is an Opportunity for Turkish Economy”, Mustafa Metin Basbay defends that ‘Turkey should capitalize on the entrepreneurial drive of the Syrian migrants.’ By giving examples from UK and Germany in the between 1990 – 2014, he says the real GDP decreased between these years due to the immigration stop to these countries. He states that the effect of migration on economy is empirically proven and undeniable in the long-term growth though business. However, he does not display any tangible information of the immigrants’ backgrounds such as the educational or informational data. Additionally, it is important to note that Syrian refugee case might be true for stabile economies; however, in the past decade Turkey’s economy has been fluctuating and been into recession. For

instance, the exchange rate of Turkish Lira to American Dollar was about 1.6 in the beginning of 2011. In February 2020, the rate is almost 6.10.

Change in the composition of the Turkish population is the third channel. The Syrian immigration has reshaped the age structure of Turkish population. Esen and Binatli (2017) discuss how Syrian immigration might shift Turkey's demographic window of opportunity. According to their description, demographic window of opportunity is period of time for significant-positive results, and occurs 'when fertility rates decline as a country develops but the elderly population is still not too large.' They argue that this period has started in 2010 and will end up in 2030 for Turkey. However, with the support of Syrian immigration, this period might shift and Turkey might benefit from it. Basbay (2019) maintains that "Syrian migration a demographic opportunity for the host country. He states that which is certainly true in the case of Syrian migration in Turkey, immigration extends the demographic window of opportunity for the recipient economy. While this is a fact of crucial significance for fast ageing societies of Europe, it has important implications for countries like Turkey as well. Thanks to the Syrian immigration, Turkey can have a larger working-age population compared to its retired for much longer than formerly anticipated." However, it is debatable that how Turkey benefits from demographic window of opportunity while many firms go out business, manufacturing and production decrease and foreign companies are uneasy to invest in Turkish market. Based on the Turkey's official statistics office, Turkey went into recession at the last quarter of 2018 (BBC). The consequences of this recession have had an impact on many sectors including construction and agriculture too. The unemployment rate as of July was nearly 13.9% while it was 10.8% as of July in 2018 (Ergocun, 2019). Both Syrian immigrants and Turkish employees have affected by recent economic changes.

The last channel is the impact of Syrian refugees in regional labor market. According to Esen and Binatl (2017)'s results, Syrian refugees increased the unemployment and decrease the informal and formal market in the short term. Additionally, What Del Carpio and Wagner (2015) found that average wage decreases in the informal sector with an insignificant effect. They mention that Syrian men tend to go into the construction sector while Syrian women tend to go into the agriculture sector. They found that, in the Southeastern Anatolia, Syrian refugees has displaced Turkish workers by accepting lower wages. Their estimation is that for every 10 Syrian workers, 6 or 7 Turkish workers are displaced in the informal market. On the other hand, Syrians have been expanding in different sectors, predominantly in the textile, apparel, education and services addition to agriculture and construction (Kirisci & Uysal, 2019). They also indicate that "... recently, Turkey's position had been that these refugees temporary and would return to Syria soon. Going forward the key issue is how refugees will continue to integrate into the Turkish labor market and society." On the contrary, the latest Femist report of September FEM43-05 states that the "long-term impact of Syrian of Syrian refugees on the Turkish economy" is positive in the long term and will increase the GDP from 1.9% to 4% from 2017 to 2028.

In another research, Suzuki, Paul, Maru and Kusadokoro (2019) analyzed the empirical results of Syrian refugees on Turkish labor market. By conducting this natural field experiment with the difference-in-differences estimation, they selected the five of the most refugee-hosting regions as the treatment regions and the four regions where Syrians refugee population is low as control groups. Their results reinforce those of Esen and Binatli (2017). According to their estimation, informal Turkish workers are 4% more likely to leave their job in the most refugee-hosting regions compared to control regions. These negative impacts increase from 2012-2013 to

2014-2015. Moreover, ‘while females and older workers withdrew themselves from the labor market, makes and younger workers become unemployed after the refugee influx.’”

In another discussion paper, Aksu, Erzan and Kirdar (2018) also utilized the difference-in-differences IV methodology to find out the outcomes of the ‘massive migration’. They estimated that almost 1-to-1 replacement in employment for native men in the informal market. Additionally, they found impact on neither wage of men nor women nor the total men employment. However, the total women employment decreases because of the ‘elimination of part-time jobs.’ Interestingly, “while the migrant influx has adverse effects on competing native workers in the informal sector, it has favorable effects on complementary workers in the formal sector.” They simply imply that “our findings, including those on the heterogeneity of effects by age and education, are consistent with the implications of the canonical migration model. In addition, increases in prices in the product market and in capital flow to the treatment regions contribute to the rise in labor demand in the formal sector.”

To summarize, there are many versions of immigration all around the world with different circumstances. Every state confronts with different consequences accordingly. For Turkey-Syria case, as mentioned above, there are 4 important channels of Syrian refugee crisis that effects directly Turkish economy. In my opinion based on the previous studies above and Turkey’s current circumstances, the Syrian immigration will decrease wages and native employment. My aim is to test empirically whether my prediction is correct. Before then, I explain the methodology of this empirical test.

METHODOLOGY

I want to thank Prof. Oguz Esen and Prof. Ayla Ogus Binatli for sharing their dataset with me and letting me use it for my research. I am exploring the impact of Syrian refugees on regional

labor markets by estimating the impact of refugees on unemployment, formal employment, and informal employment just like they did in their research. Therefore, I want to specify that I have replicated their methodology part. Their panel data includes 26 NUTS 2 (Nomenclature of territorial units for statistics-classification 2 region in Turkey between 2004 and 2016. My contribution to their dataset is an additional 2 more years; 2017 and 2018. My aim is to update their dataset in order to see whether there is any change within 2016 and 2018 because I want to see whether people have been changing their opinion about Syrian immigrants negatively and Turkish economy has been declining since 2016.

Table 1: 26 NUTS 2 Regions

TRA1	Erzurum, Erzincan, Bayburt
TRA2	Ağrı, Kars, Iğdır, Ardahan
TRB1	Malatya, Elâzığ, Bingöl, Tunceli
TRB2	Van, Muş, Bitlis, Hakkâri
TRC1	Gaziantep, Adıyaman, Kilis
TRC2	Şanlıurfa, Diyarbakır
TRC3	Mardin, Batman, Şırnak, Siirt
TR10	İstanbul
TR21	Tekirdağ, Edirne, Kırklareli
TR22	Balıkesir, Çanakkale
TR31	İzmir
TR32	Aydın, Denizli, Muğla
TR33	Manisa, Afyon, Kütahya, Uşak
TR41	Bursa, Eskişehir, Bilecik
TR42	Kocaeli, Sakarya, Düzce, Bolu, Yalova
TR51	Ankara
TR52	Konya, Karaman
TR61	Antalya, Isparta, Burdur
TR62	Adana, Mersin
TR63	Hatay, Kahramanmaraş, Osmaniye
TR71	Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir
TR72	Kayseri, Sivas, Yozgat
TR81	Zonguldak, Karabük, Bartın
TR82	Kastamonu, Çankırı, Sinop
TR83	Samsun, Tokat, Corum, Amasya
TR90	Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane

Source: TurkStat

In the dataset, there are two different variables created for the Syrian refugees. The total number of the Syrian refugees in Turkey is the first variable. This is a variable that measures Syrian refugees' entry into the national labor market. The second variable is an integrated density variable a la Bevan and Estrin (2004), and Güngör and Ogus (2010). If the number of Syrian refugees is less than 1000, the integrated density variable takes the value 0. If more than 1000 but less than 25,000, the density variable takes the value 1. When the number of Syrian refugees exceeds 25,000 but less than 50,000, it takes the value 2. If it exceeds 50,000, the density variable takes the value 3. The number of Syrian refugees in the provinces is the Ministry of Foreign Affairs Humanitarian Information Unit, UN Refugee Agency (UNHCR) and the Disaster and Emergency Management Directorate (AFAD). It publishes schematic information on the distribution and density of Syria intermittently. Population Based on these sources, the authors created the integrated density variable used in econometric analysis (Esen, Binatli 2017).

Unemployment, both formal and informal employment models are estimated to elicit the impact of Syrian refugees on regional labor markets. In addition to the variables discussed above, uneducated persons in the labor force, the number of people with high school education in the workforce, the labor market in university education that number of people and labor force growth rate was included in Turkey's economy, in addition, they regressed. There are other variables that are potentially crucial determinants of labor market outcomes, but regional level data are only available for a limited number of indicators related to the labor markets in Turkey. Thus, I cannot include all variables related to unemployment, formal and informal employment in my regressions. Fixed effects and random effects models were estimated and compared with Hausman specification test.

Fixed effects model, also known as least squares dummy variable model,

$$Y_{it} = \sum_k \beta_k X_{it,k} + \sum_i \gamma_j D_i + \varepsilon_{it}$$

where Y is the dependent variable, X 's are explanatory variables, D 's are dummy variables for each region, and γ 's are the parameters of the model and ε is the error term. The indexes i and t represent regions and time, respectively. In this study, I analyze 26 regions and years between 2004 and 2018.

The rationale behind the random effects model is that the error term generally represents the effect of omitted variables, and some of the omitted variables may represent factors specific to individuals or time periods or both. It should be treated as if it consists of three components. The random effects model can then be represented as follows:

$$Y_{it} = \mu + \sum_j \beta_j X_{it,j} + v_{it}$$

and

$$v_{it} = \alpha_i + \lambda_t + v_{it}$$

where Y is the dependent variable, X 's are explanatory variables, β 's are the parameters of the model, and v is the compound error term divided by region-specific, time-specific and random error terms.

The traditional way to test whether the random effects model provides a significant improvement over the fixed effects model is done with the Hausman test; where the null hypothesis is that random effects do not provide a significant improvement over the fixed effects mode over alternative effects. The test statistic is distributed as $\chi^2(k)$, where k is the number of regressors, except for dummy variables in the fixed effects model. Regional Labor Force Statistics from the database at www.turkstat.gov.tr address labor Turkey Statistical Institute, the unemployed, to gain

data on education levels of registered and unregistered workers were obtained. Turkey's growth rate, Turkey Statistical Institute has been obtained from the National Accounts. Econometric analysis was done in the 16th version of Stata software.

RESULTS AND DISCUSSION

All the tables below, Table 2,3 and 4, include the same independent variables, but different dependent variables. The dependent variables are the number of unemployed in each NUTS region (Table 2), the number of employed people with SSN in each NUTS region (Table 3), number of employed people without SSN in each NUTS region (Table 4). The common independent variables for all the tables below are “natural log of the number of Syrian refugees in Turkey, the integrated variable that shows the density of the number of Syrian refugees in the region, the number of wage earners in the region, the number of uneducated people in the labor force, the number of people with high school education in the labor force, the number of people with university education in the labor force and the growth rate of the Turkish economy” (Esen and Binatli, 2017).

Table 2 (unemployment) and Table 3 (formal employment) exhibit the estimation results of the fixed effects regression; Table 4 (informal employment) exhibits the estimation results of the random effects regression.

The average unemployment in my dataset (includes 26 regions from 2004 to 2018) is 109.7095116 (124.869542). The average informal employment is 364.9589744 (188.7914843). The average formal employment is 550.0230769 (669.9279875).⁷

⁷ The numbers are in thousands. The numbers in parenthesis represent the standard deviation.

The Effects of Syrian Refugees on Unemployment

Table 2:

Regression Results: The determinants of unemployment	
Variables	Coefficient
ln(total refugees)	-1.131271 (.2881867) ***
Refugee Intensity	5.332385 (1.973899) ***
Wage Earners	-.0243936 (.0431213)
Uneducated	.8036591 (.1535697) ***
High School	.1553401 (.1398162)
University	.2393453 (.0592005) ***
Growth	-1.500783 (.3593097) ***
Regression Statistics and Tests	
Observations	389
Groups	26
R ² within	0.5586
R ² between	0.9286
R ² overall	0.8628
F-test	64.36*** F (7,356)
Hausman Test	0.84 X ² (7)

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively. The estimate of the intercept terms is not reported.

In Table 2, the natural log of total Syrian refugees and refugee intensity are estimated to be statistically significant indicator of the unemployment rate in the regional labor market. As Esen and Binatli (2017) mention in their result part, after the 2008 crisis, the employment rate fell dramatically, especially in some regions. The coefficient of ln (total refugees) is negative, showing

that Syrian refugee has a positive effect on the labor market by lessening the unemployment. Moreover, the coefficient of the natural log of total refugees is -1.397306 in Esen and Binatli (2017) results. 2016 is the very last year in their paper whereas 2018 is the last year in this work. Within these two years, it can be concluded that the positive effect of Syrian refugees on the labor market lessening unemployment has declined by -0.266035.

The education level variables in the Table 2 are Uneducated, High school and University (The units are graduation level of number of people). Among these, while Uneducated and University are statistically significant, High School is not significant at all. The idea behind the education level is that the less educated people are, the more unemployed there is. In Esen and Binatli (2017)'s results, the coefficient of Uneducated is 0.6323171 and University 0.268145. There is an increase of 0.171342 in Uneducated and a decrease of 0.0287997 in University. It can be concluded that the level of education has lowered with more refugees in 2 years. These results also back up that unemployment and level of education are negatively correlated.

The coefficient of the Turkey's growth rate is negatively significant, -1.500783. This coefficient is 0.2629569 in Esen and Binatli's results. The difference is -1.7637399. Firstly, one of the reasons why the difference is so large that I used a different data of growth (Based on yearly GDP) than that of Esen and Binatli (2017). The other reason is that Turkish economy has been declining over the past years.

The Effects of Syrian Refugees on Formal Employment

Table 3:

Regression Results: The determinants of formal employment	
Variables	Coefficient
ln(total refugees)	.3947146 (.3376024)
Refugee Intensity	-3.609857 (2.312112)
Wage Earners	.8185774 (.0505173) ***
Uneducated	-.557194 (.1776567) ***
High School	.6331594 (.1637901) ***
University	.3298901 (.069348) ***
Growth	.6476995 (.4209217)
Regression Statistics and Tests	
Observations	390
Groups	26
R ² within	0.9753
R ² between	0.9954
R ² overall	0.9928
F-test	2013.92*** F (7,357)
Hausman Test	17.54** X ² (7)

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively. The estimate of the intercept terms is not reported.

Table 3 has the same variables and test that Table 2. On the other hand, Esen and Binatli (2017) did not “include the number of people with high school education in the labor force in this regression because asymptotic assumptions of the Hausman test were violated.” Instead, they “opted to estimate the regression with only two educational attainment variables at the two ends

of the scale.” However, in my regression, asymptotic assumptions of the Hausman test were not violated. Thus, I included high school variable, and it is statistically significant.

In Table 3, in contrast to Table 2 estimations, the natural log of total Syrian refugees and refugee intensity are estimated to be not statistically significant indicator of the formal employment rate in the regional labor market. Therefore, I do not find them reliable to comment on.

The education levels are estimated to be statistically significant indicator of the formal employment rate in the regional labor market. It is seen that no-education is negatively correlated with formal employment whereas university is positively correlated. In Esen and Binatli (2017)’s results, Uneducated and University are -0.7871884 and 0.4155529 , respectively. Hence, the variable Uneducated has increased by 0.2299944 in formal employment while the variable University has decreased by 0.0856628 . From these estimations, it can be said that more uneducated Syrian refugees entered the formal sector. This is due to, as Esen and Binatli (2017) mentions, more Syrians are authorized to get work permit in Turkey. They do not only work for Turkish companies nowadays, but intend to establish their own business such as, most commonly, restaurants. In contrast to Table 2’s growth rate, Turkey’s growth rate is estimated to be insignificant on the formal employment. The growth rate of the Turkish economy is found to have no effect on formal employment.

The Effects of Syrian Refugees on Informal Employment

Table 4:

Regression Results: The determinants of informal employment	
Variables	Coefficient
ln (total refugees)	-.7219242 (.4320249) *
Refugee Intensity	-1.364496 (3.129175)
Wage Earners	.218349 (.0579067) ***
Uneducated	3.990361 (.2301516) ***
High School	.5359368 (.2070471) **
University	-.6407464 (.0637709) ***
Growth	.1897979 (.576968)
Regression Statistics and Tests	
Observations	390
Groups	26
R ² within	0.4789
R ² between	0.8516
R ² overall	0.8164
Wald Test	453.67*** X 2(7)
Hausman Test	23.11*** X 2(7)

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% level respectively. The estimate of the intercept terms is not reported.

In Table 4, refugee intensity is estimated to be statistically insignificant; The natural log of total Syrian refugees is estimated to be significant at the 10% level; High School refugees is estimated to be significant at the 5% level; Wage earners, Uneducated, and University are the only ones found to be statistically significant at 1% level. These estimations indicate that the more

uneducated people are, the more likely they are in the informal sector. In Esen and Binatli (2017)'s results, Uneducated and University are 4.157735 and -1.000119 , respectively.

The insignificancy of the natural log of total Syrian refugee and refugee intensity in Turkey are consistent with the findings of Del Carpio and Wagner (2015) and Esen and Binatli (2017). “Del Carpio and Wagner (2015) find that refugees lower wages in the Southeastern Anatolia in the informal sector, displacing Turkish workers. They estimate that every ten Syrian workers displace six or seven Turks in the informal labor market, especially affecting women and the uneducated workers. Duruel (2017) reports similar findings.” (Esen and Binatli, 2017). My findings also support these previous results. Hence, it can be observed that there is not much change in the last few years.

It is seen that Uneducated has decreased by 0.167374, and University has increased by 0.3593726. This means that the number of people in the informal sector has decreased in the past two years. This might be due to recent government regulations on work-permit. On the other hand, Syrian refugees are concentrated in construction work areas which have been declining dramatically in Turkish economy. Therefore, we cannot say that these Syrian workers have shifted from informal sector to formal sector, rather they became unemployed due to bad economy.

CONCLUSION

Since 2011, both Turkish government and civilians have been carrying an enormous responsibility, and doing the right thing for their Syrian neighbors. It is 2020 now, and many of them have settled in Turkey, and already began a chapter in their life. Yet, some others are determined to cross Europe because Turkey does not offer them a better life anymore. Turkey

opened the borders for Syrians. First and foremost, this indicates that Turkey's economy cannot afford to keep all the refugees within its borders. It is a fact that Turkish economy is in decline and unemployment is on the rise. That is why Syrian refugee crisis became very essential for the core of Turkish economy.

In this article, it is estimated that regression models for unemployment, formal and informal employment reveal the impact of Syrian refugees on regional labor markets using panel data at the regional level. I have reached almost similar results of Esen and Binatli (2017)'s. The high-density regions of Syrian refugees are found to be more unemployed. Similarly, a high concentration of Syrian refugees is found to reduce formal employment as well as informal employment. Earlier articles examining the first years of the Syrian refugee crisis have found a positive effect on official employment. In the early years of the crisis, it is possible that the effects on formal employment are basically positive, as the construction and operation of refugee camps is a labor-intensive effort, with most Syrian refugees living in refugee camps. As the number of Syrian refugees increased, they could not host the camps and were allowed to live outside the camps. Initially, most stayed in cities near camps, but gradually a significant number of refugees moved west. Geographical advances may also have changed their impact on regional labor markets. (Esen and Binatli, 2017). Using random and fixed effects regressions, this paper finds that places with more refugees had an increase in unemployment and lower the wages. This is due to both huge inflow of Syrian refugees and declining Turkish economy.

Policy Implications

“As of January 2016, Syrians can receive work permits” (Esen and Binatli. 2017). In this study, the effects of this policy can be seen in the results. The estimates show that unemployment has increased, more Syrians entered into formal sector and left informal sector since this policy implication. The most important issue is education. Balbay (2019) indicates that “as it became clear that there are no prospects for a return to Syria in near future and most Syrian refugees are likely to be permanent in Turkey, government made a momentous decision to incorporate Syrian children completely to the Turkish public education system.” I believe that the fruits of better education policies can be seen in the next generation of Syrian refugees. Their children would not be refugee anymore but Turkish citizens with Syrian roots; They would speak Turkish perfectly so it would be much easier for them to find formal jobs and making a living. Thirdly, they would contribute the GDP by paying their taxes, and Turkey would spend less from its treasury since there would be less Syrian refugees in need. Lastly, as seen in Figure 1, the Syrian inflow to Turkey has dropped, even lessened over the past 2 years. This supports the idea that Turkey has put some regulations on to eliminate Syrian refugee inflow into the country due to bad economy.

Limitations

One of the limitations is that the bad management of Turkish economy by the current government. In January 1st 2011, \$1 was equal to 1.54 Turkish Liras. In January 1st 2017, \$1 was equal to 3.52 Turkish Liras. In April 3rd 2020, 1\$ was equal to 6.73 Turkish Liras. This negatively trend of the exchange rate between two currencies have had tremendous impacts of Turkish economy over the past 9 years. There has been a huge inflation on Turkish economy as well as unbearable tax rates for the mass. These are the outcomes of a declining economy. Even though

GDP has risen over these years, GDP per capita has declined so that the national growth was actually very unjust. This caused middle class to lessen every other day. This is a really important factor for Turkey-Syria case because this declining economy is not completely related to Syrian refugee crisis. The current government's bad economic decision has reshaped Turkey's future negatively. For the sake of short-term advantages, many long-term benefits were eliminated throughout these years.

Another limitation is the reliability of the current data. I believe that informal labor market information is not trustable as people do not want to reveal that they're working without paying taxes because they might assume that they go in trouble. On the other hand, the surveys done to Syrian refugees would not reflect very good data. Thus, I believe informal data might be an estimation of Syrian refugees who work without a permit.

For Future Works

I can say that there will be more variables to estimate the impact of Syrian refugees on Turkish market. Firstly, in the beginning of 2020, during February, Turkey opened its own borders for refugees to immigrate Europe towards Greece. Erdogan accused Europe both not to help Turkey in Idlib War between Erdogan's government versus Esad's regime conflicted, and not to help Turkey financially even though Turkey carried refugee crisis by itself all along from the beginning.

Therefore, this political action will affect Turkish labor market either directly or indirectly. On the other hand, theoretical model in this research predicted a decrease in wages, however, since I do not have information on wages and, therefore, cannot test my model's prediction. As a future

examination, I recommend researchers to gather data on wages and test the impact of the Syrian immigration on this variable.

Secondly, the impact of COVID-19 pandemic in 2020 on the World's economy might/will create big problems in the coming future. Turkey will have to face these problems as well just like any other country in the world. Turkey's economy has been going bad in the past years, and now the World's economy is also being tested. For the future analysis, it is essential to differentiate the impacts of different crisis one by one.

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